REMARKS/ARGUMENTS

Upon entry of this amendment, claims 1 and 16-30 will be canceled without prejudice or disclaimer of the subject matter recited therein so that canceled claims include claims 1, 2, 16-30 and 32. Claims 3-7, 11, 12 and 15 will be amended. Accordingly, claim 31 is the sole remaining independent claim with each remaining pending claim being directly or indirectly dependent upon independent claim 31.

Reconsideration and allowance of the application are respectfully requested.

Discussion of November 17, 2004 Interview

Applicants express appreciation for the courtesies extended by Examiners Belyavskyi and Chan during a November 17, 2004 personal interview at the Patent and Trademark Office with Applicants' representative Arnold Turk.

During the interview, the rejection of record was discussed and arguments in accordance with the arguments submitted in Applicants' response filed June 30, 2004 were discussed. Arguments were presented that one having ordinary skill in the art following the arguments presented in Applicants' previous response would not have been motivated to arrive at the subject matter recited in Applicants' claims. However, the examiners contended that one having ordinary skill in the art would have been motivated to modify either primary reference, i.e., Kitano, GB 2282548 or Mitoh, GB 2307552, with avidin, streptavidin or derivatives thereof and then with biotinated antigen or antibody to obtain a good and right orientation in accordance with Nakayama, U.S. Patent No. 5,827,669, at column 5, second full paragraph. Moreover, the examiners asserted that

one having ordinary skill in the art would have been motivated to apply the blocking agent of the primary references prior to the biotinated antigen or antibody, and that these particles could be spherical.

Response To Maintaining Of Restriction Requirement

Applicants once again respectfully submit that the Restriction Requirement is improper, because antigens and antibodies should not be separate groups of invention, but are, in fact, species of the broadly recited antigen or antibody in the independent claim. Prosecution of species of antigen and antibody is appropriate in the instant application. Therefore, upon allowance of a generic claim, claims directed to non-elected species should be rejoined.

Applicants further note that non-elected claims 16-30 have been canceled without prejudice or disclaimer to the filing of the subject matter recited therein in one or more continuation and/or divisional applications.

Accordingly, reconsideration and withdrawal of the Restriction Requirement is respectfully requested.

Response To Rejection Based Upon Prior Art

The following rejection is the sole prior art rejection that has been maintained in the Office Action:

Claims 1, 3-15 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitano et al. (hereinafter "Kitano"), GB 2,282,548, or Mitoh et al. (hereinafter "Mitoh"), GB 2,307,552, each in view of Nakayama et al. (hereinafter "Nakayama"), U.S. Patent No. 5,827,669, and further in view of Johnson et al. (hereinafter "Johnson"), U.S. Patent No. 4,885,207.

In response to the above-noted rejection, Applicants respectfully submit the following:

Applicants independent claim 31 is directed to a carrier having immobilized antigens or antibodies, comprising:

a carrier having a substantially spherical shape and having a surface, wherein at least the surface of the carrier is formed of a calcium phosphate based compound;

antiligands provided on the surface of the carrier;

a blocking layer formed of a protein having low interaction with antigens or antibodies and having a metallic ion which has been subjected to a treatment for removing or reducing the metallic ion, the blocking layer being located on at least a portion of the surface of the carrier where the antiligands are not provided; and

antigens or antibodies each having a constant region on which a ligand is provided, each of said antigens or antibodies being immobilized to the surface of the carrier through bonding between the ligands and antiligands with the blocking layer effectively preventing

antigens or antibodies from being directly absorbed to the surface without bonding between the ligand and the antiligands.

The features of Applicants' claims have been thoroughly discussed in Applicants' previously filed responses, including the Amendment Under 37 C.F.R. 1.116, filed June 30, 2004. Accordingly, for the sake of brevity these arguments are not being repeated herein but are incorporated by reference as if set forth in their entirety. In particular, Applicants note that, as has previously been pointed out by Applicants, in accordance with the present invention, it is possible to provide a carrier having immobilized antigens or antibodies where the antigens or antibodies are immobilized to the surface of the carrier through the bonding between the ligands and the antiligands. In the present invention, antiligands are provided on and surround the surface of the carrier, a blocking layer is formed on a portion of the surface of the carrier where the antiligands are not provided, and antigens or antibodies are immobilized to the surface of the carrier through bonding between the ligands and the antiligands with the blocking layer effectively preventing antigens or antibodies from being directly absorbed to the surface without bonding between the ligands and the antiligands.

Further expanding upon the above, the Examiner's attention is once again directed to Applicants' originally filed disclosure for disadvantages of the prior art, and advantages associated with Applicants' invention. For example, attention is particularly directed to page 9, beginning at line 21, wherein it is disclosed that:

> In more detail, reacting portions of the immobilized antigens or antibodies (hereinafter, simply referred to as "reacting portions") for antibodies or antigens (bonding objects) in a sample to be examined are adsorbed by the surface of the carrier, so that they can not exhibit a sufficient bonding ability for the bonding objects.

> In view of the above, the inventors have conceived that if antigens or antibodies can be immobilized to a carrier with the state that their reacting portions are not adsorbed by the surface of the carrier, it may be possible to obtain a carrier having immobilized antigens or antibodies having a high bonding ability to the bonding objects.

Moreover, attention is specifically directed to page 19, beginning at line 12, wherein it is disclosed that:

> By providing such a protein coating, it becomes possible to effectively prevent the antibodies from being unspecifically adsorbed to the carrier when the antibodies are immobilized to the carrier. Namely, it is possible to prevent that the antibodies are adsorbed to the carrier directly without using the ligands and antiligands. As a result, the carrier having immobilized antibodies can have an increased antigen bonding ability.

According to the present invention, the antigens or antibodies are immobilized to the surface of the carrier through their portions that are irrelevant to the antigen-antibody reaction through the bonding between the ligands and the antiligands. Therefore, according to the present invention, it is possible to avoid that antibodies or antigens having ligands (such as biotinylated antibodies) which are expensive are not wasted. Further, it is also possible to improve reliability of the analytical procedure in which the carriers are used.

For the reasons previously advanced by Applicants, Applicants respectfully submit that one having ordinary skill would not combine Kitano, Mitoh, Nakayama and/or Johnson to arrive at Applicants' disclosed and claimed invention. For example, there is no motivation in the prior art to combine the disclosures of the documents utilized in the rejection of record to arrive at Applicants' invention.

Moreover, claim 31 recites, amongst other features, a blocking layer formed of a protein having low interaction with antigens or antibodies and having a metallic ion which has been subjected to a treatment for removing or reducing the metallic ion, the blocking

layer being located on at least a portion of the surface of the carrier where the antiligands are not provided. According to this structure, the protein coating for the surface of the carrier can be made to a substantially complete one, as disclosed at page 20, lines 18-23. Applicants respectfully submit that the prior art utilized in the rejection of record does not teach or suggest this aspect of Applicants' invention. Accordingly, for this additional reason, no combination of the prior art would not teach or suggest Applicants' invention as recited in claim 31.

The rejection admits that the documents utilized in the rejection do not disclose subjecting the protein in the blocking layer to a treatment for removing or reducing the metallic ion. However, the rejection makes a naked assertion that casein is a metallic protein that can be treated to remove or reduce the metallic ion as claimed. Whether or not a metallic ion can be removed or reduced is not the question. The rejection must address whether one having ordinary skill in the art would have been motivated to modify the prior art to arrive at Applicants' invention. In the instant situation, the rejection is silent with respect to any such motivation.

The rejection merely contends that:

> However, it is noted that GB '548 does not limited said blocking peptide to any particular type of casein, thus referenced casein can be treated to remove or reduce the blocking metallic ion. Moreover, both the prior art and the instant application only used casein to cover the portion of the surface of the carrier to prevent unspecific bonding to the blocking agent and the Specification does not teaches any advantage of using treated casein as a blocking gent compared to untreated casein.

However, the question is not what Applicants' specification discloses but what the prior art teaches or suggests. In the instant situation, the prior art does not provide any motivation for subjecting the protein in the blocking layer to a treatment for removing or

reducing the metallic ion. Moreover, as noted above, advantages of removing or reducing the metallic ion in the protein having a metallic ion are disclosed in the last full paragraph on page 20 of Applicants' specification.

The Examiner is reminded that the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). The Examiner is reminded that although the prior art may be capable of being modified, there must be a suggestion or motivation in the prior art to do so.

Thus, Applicants respectfully submit that the only teaching or suggestion that would lead one having ordinary skill in the art to arrive at Applicants' invention is within Applicants' disclosure, and the use of such disclosure by the Examiner is improper. In order to support the conclusion that the claimed invention is either anticipated or rendered obvious over the prior art, the prior art must either expressly or inherently teach the claimed invention or the Examiner must present a convincing line of reasoning why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references. Ex parte Clapp, 227 U.S.P.Q. 972 (B.O.A. 1985).

Additionally, each of the dependent claims is patentable over the prior art of record in view of the fact that each of these dependent claims includes the limitations of the independent claims. Moreover, each of the dependent claims is patentable over the prior art of record because it would not have been obvious to one having ordinary skill in the art to incorporate such dependent claim features into the invention as more broadly recited in the independent claims.

In view of the above, the rejection of record should be withdrawn, and all of the pending claims indicated to be allowable.

CONCLUSION

In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw the objections and rejections of record, and allow each of the pending claims.

Applicants therefore respectfully request that an early indication of allowance of the application be indicated by the mailing of the Notices of Allowance and Allowability.

Should the Examiner have any questions regarding this application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,
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